NOTES 16: HYPOTHESIS TEST CONTROVERSIES

Stat 120 | Fall 2025
Prof Amanda Luby

ESP Example: subjects draw a card at random and telepathically communicate this to someone who then guesses the symbol.

Population parameter:

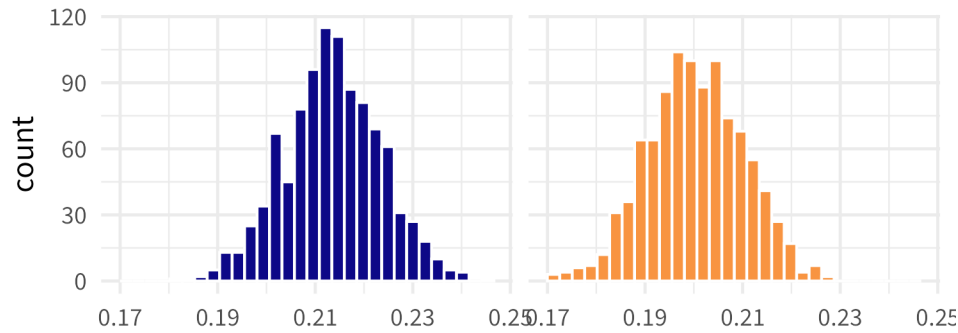Sample statistic:

H_0:

H_A:

Results 1:

Results 2:

Results 3

With *small samples* even _____ effects might not be statistically significant

With *large samples* even _____ effects might be statistically significant

Which is the *bootstrap distribution* and which is the *null distribution*?

Sketch out the *confidence interval* and the *rejection region* for the hypothesis test

1 Multiple Testing

When you do a single hypothesis test, your Type I error rate is:

If you do many hypothesis tests, your Type I Error rate is:

If you do 10 tests, your overall Type I Error rate is:

If you do 100 tests, your overall Type I Error rate is:

2 Six principles from ASA statement

1. P-values can indicate how incompatible the data are with a specified statistical model.
2. P-values do not measure the probability that the studied hypothesis is true, or the probability that the data were produced by random chance alone.
3. Scientific conclusions and business or policy decisions should not be based only on whether a p-value passes a specific threshold.
4. Proper inference requires full reporting and transparency.
5. A p-value, or statistical significance, does not measure the size of an effect or the importance of a result.

6. By itself, a p-value does not provide a good measure of evidence regarding a model or hypothesis.